

REMARKS/ARGUMENTS

Claims 8-23 are pending in this application.

Claims 1-7 have previously been canceled without prejudice.

Claims 8-10 and 18 stand rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 3,761,956 to Takahashi et al (hereinafter "Takahashi").

Claims 11, 12, 16, 17, 22 and 23 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of U.S. Pat. No. 3,860,838 to Kumon (hereinafter "Kumon").

Claims 13-15 and 19-21 are objected to as being dependent upon a rejected claim, but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims.

Applicant thanks the Examiner for noting the allowability of claims 13-15 and 19-21 if rewritten in independent form; however, Applicant respectfully traverses all rejections and objections herein.

I. REJECTIONS OF CLAIMS 8-10 AND 18 UNDER 35 U.S.C. §102(b)

Claims 8-10 and 18 stand rejected under 35 U.S.C. §102(b) as being anticipated by Takahashi. Applicant herein traverses these rejections.

Claim 8 of the present application relates to "[a]n ultrasonic vibration apparatus, comprising: a disk like vibration plate having a circular vibration surface, said vibration surface having an outer periphery; a support member coupled to said disklike vibration plate along a circular path located inside said outer periphery of said circular vibration surface so as to divide said vibration surface into inner and outer regions; and a piezoelectric element coupled to a

central region of said disk-like vibration plate to cause said inner and outer regions to vibrate in substantially the same phase. (Claim 8)(emphasis added). Figures 1B and 3 illustrate how the inner and outer regions vibrate in substantially the same phase. The interfering sound waves created by the vibration of the inner and outer surfaces in substantially the same phase allows the present invention to create the desired narrowed directivity. (See, Figs. 2 and 4).

Takahashi purportedly relates to “a sound generating device including a piezoelectric vibrator” whereby large sound outputs are created by “a resonance cavity” creating a sound wave as illustrated by a dashed line in figure 1. The sound generating device includes a disk vibrating plate 2, a piezoelectric element 1 coupled to the central region of the disk vibrating plate 2, a support member 4 coupled to the disk vibrating plate 2 so as to have inner and outer vibrating surfaces. (Takahashi, col. 1, ll. 42-68). A vibration node 11, 12 is defined substantially near where the support member 4 is coupled to a cylindrical base member 5. (Takahashi, Figs. 1-3). As can be seen by the dashed lines in Fig. 1 of Takahashi, the piezoelectric element is coupled to a central region of the disk-like vibration plate to cause the inner and outer regions to vibrate in the contrary phase. Thus, when the inner region vibrates to the bottom side, the outer regions vibrate to the upper side. (See, Takahashi, Fig. 1). Takahashi achieves its desired increase in sound output by the placement of “a cylindrical resonating chamber having a diameter of the node circle of vibration of the diaphragm at or near the node circle. (Takahashi, col. 1, ll. 7-22).

A claim is anticipated if "each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 U.S.P.Q.2d (BNA) 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained

in the ...claim." Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 U.S.P.Q.2d (BNA) 1913, 1920 (Fed. Cir. 1989); M.P.E.P. § 1231.01.

Applying the above stated standard, Takahashi does not inherently or expressly describe "a piezoelectric element coupled to a central region of said disk-like vibration plate to cause said inner and outer regions to vibrate in substantially the same phase" as set forth in claim 8. (Claim 8)(emphasis added). The shape of the sound wave formed by the Takahashi device is similar in shape to those of the prior art devices (illustrated is Fig. 9B of the Spec.) that Applicant herein improves upon. The sound waves propagate from the Takahashi device, as illustrated by the dashed lines in Fig. 1, only if the inner and outer regions are vibrating in the contrary phase. Thus, unlike the present invention, when the inner region vibrates to the bottom side, the outer regions vibrate to the upper side. Therefore, Takahashi does not expressly or inherently described each and every element as set forth in claim 8.

For at least the forgoing reasons, it is respectfully submitted that claim 8 is not anticipated by Takahashi. Furthermore, claims 9-10 and 18 ultimately depend from allowable claim 8. Therefore, it is requested that rejection of these claims as anticipated under 35 U.S.C. § 102(b) over Takahashi be withdrawn for at least the above said reasons.

II. REJECTIONS OF CLAIMS 11, 12, 16, 17, 22 AND 23 UNDER 35 U.S.C. §103(a)

Claims 11, 12, 16, 17, 22 and 23 stand rejected under 35 U.S.C. §103(a) as being obvious over Takahashi in view of Kumon. Applicant herein traverses these rejections.

Kumon purportedly relates to "an improved piezoelectric buzzer . . . which can effectively amplify acoustic waves generated by the vibrator without any increase in the size of the vibrator and/or power consumption." (Kumon, col. 1, ll. 45-50). Another object is to

“substantially amplify acoustic volume generated by the use of a[n improved] casing.” (Kumon, col.1, ll. 50-54). “For attaining the above objects . . . the casing is encircled by a horn member.” (Kumon, col. 1, ll. 55-59). Kumon discloses a vibrating disk 4, a piezoelectric device 3, a support member 7g, and a cylindrical base member 7b that has an outer periphery, which lies outside the circular path of the support member 7g with the thickness of the cylindrical member 7b being thicker than the support member 7g as well as acoustical chambers and horns to achieve amplification. (Kumon, Fig. 2).

To reject a claim as obvious under § 103 (a), the Examiner must demonstrate a suggestion or motivation to combine references, a reasonable expectation of success, and that the suggested combination or references teaches each and every limitation of the claim. See In re Vaeck, 947 F.2d 488, 20 U.S.P.Q.2d (BNA) 1438 (Fed. Cir. 1991); M.P.E.P. § 2142.

“[A]pparatus claims must be structurally distinguishable from the prior art”, M.P.E.P. § 2114, but “there must [also] be some suggestion or motivation” to modify the reference or combine the teachings. In re Kotzab, 217 F.3d 1365, 1371, 55 U.S.P.Q.2d (BNA) 1313, 1318 (Fed. Cir. 2000) (References individually teaching all aspects of the claimed invention were insufficient to establish a prima facie case of obviousness without some objective reason to combine the teachings not the references.).

The Examiner lacks the necessary “suggestion or motivation to combine” Takahashi and Kumon. The Examiner argues that “it would be obvious to one skilled in the art at the time the invention was made to design a vibrating apparatus as disclosed by Takahashi et al and to modify the invention by having the cylindrical base member with an outer periphery, which lies outside the circular path of the support member for the purpose of providing a piezoelectric device that can amplify acoustic waves without increasing the size of the vibrator

and power consumption as disclosed by Kumon.” (Office Action, dated August 17, 2004, p. 4)(emphasis added). Applicants point out, however, that the “objects of this invention are to provide a miniaturized ultrasonic vibration apparatus showing narrow directivity characteristics without causing the frequency to be increased.” (Spec., p. 4). Narrowed directivity, as achieved in the present invention, is not the same as increasing loudness or amplitude. In fact, the overlapping waves created in the present device completely counter each other (zero net amplitude) in certain ranges, thus providing a desired range having a narrow range of net wave propagation. (See, Spec., p. 4-5; Figs. 2 and 4). Therefore, one knowledgeable in the art would not look to Kumon or Takahashi at the time of invention to solve the objective of narrowed directivity because both are primarily concerned with increasing amplitude and loudness, and do not reference, teach or suggest in any way how to narrow the directivity of sound waves. Accordingly, it is respectfully submitted that the Examiner has not demonstrated a valid suggestion or motivation to combine Kumon and Takahashi.

Furthermore, supposing proper motivation or suggestion exists to combine Kumon and Takahashi, this combination does not teach each and every limitation of claims 8, 22 and 23, specifically being: “an ultrasonic vibration apparatus comprising . . . a piezoelectric element coupled to a central region of said disk-like vibration plate to cause said inner and outer regions to vibrate in substantially the same phase.” (emphasis added). Regarding Takahashi, as demonstrated above in part I, its piezoelectric element is coupled to a central region of the disk-like vibration plate to cause the inner and outer regions to vibrate in the contrary phase, and not substantially the same phase. (Takahashi, Figs. 1-3). Regarding Kumon, Kumon does not add any additional information regarding the creation of inner and outer regions vibrating in

substantially the same phase. Rather, Kumon, discusses the use of acoustical chamber and horn configurations to achieve increased loudness. Therefore, the combination of Takahashi and Kumon does not teach “a piezoelectric element coupled to a central region of said disk-like vibration plate to cause said inner and outer regions to vibrate in substantially the same phase,” as required by claim 8.

Accordingly, it is respectfully requested that the rejections of claims 22 and 23 be withdrawn. Furthermore, because claims 11, 12, 16 and 17 ultimately depend from allowable claim 8, they too are allowable for at least the same reasons and the withdrawal of these rejections are respectfully requested.

III. OBJECTIONS TO CLAIMS 13-15 AND 19-21

Claims 13-15 and 19-21 are objected to as being dependent upon a rejected claim, but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims. Applicant thanks Examiner for noting the allowability of claims 13-15 and 19-21 if rewritten in independent form; however, given the above arguments, it is respectfully submitted that claims 13-15 and 19-21 depend from allowable claims and are thus in allowable form. Therefore, Applicant respectfully requests the withdrawal of these objections.

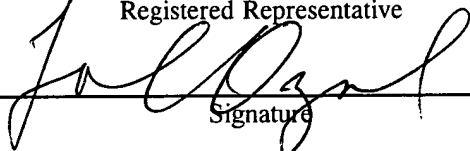
In view of the above, Applicants submit that all claims in this application are now in condition for allowance, prompt notification of which is requested.

Applicants note that an Information Disclosure Statement (IDS) was filed on September 16, 2004. Applicants request that the Examiner consider this IDS and make it of record herein.

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on January 3, 2005

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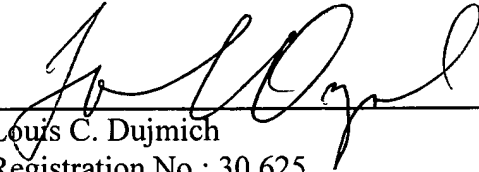

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January 3, 2005

Date of Signature

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Respectfully submitted,



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